

REMARKS

This paper is submitted in response to the Office action dated February 17, 2009 (the "Office Action").

Claims 36-41, 57, and 65-67 are pending in the application, including new claims 66-67.

Claims 36-38 are withdrawn from consideration.

Claims 39-41, 57, and 65 stand rejected.

The amendments add no new matter. Support for the amendments may be found throughout Applicant's Specification and Drawings as originally filed, for example on p. 29, lines 23-27. The amendments to the claims have been made to expedite prosecution. While not conceding that the cited reference(s) qualify as prior art, but instead to expedite prosecution, Applicant has chosen to respond as follows. Applicant reserves the right to establish that the cited reference(s), or other references cited thus far or hereafter, do not qualify as prior art as to an invention embodiment previously, currently, or subsequently claimed. Applicant also reserves the right, for example in a continuing application, to pursue the previously pending claims or claims similar thereto. Applicant respectfully submits that the pending claims are allowable in view of the following remarks and the above amendments, and respectfully requests reconsideration of the pending rejections.

Restriction and Constructive Election

A restriction requirement has been applied to Applicant's claims 36-38. The Office Action indicates on p. 3 that the restriction requirement arises from amendments that were made in Applicant's submission dated November 19, 2008.

Applicant respectfully draws the Examiner's attention to the amendments of November 19, 2008, and submits that those amendments substantially narrowed claims 36-38 from their previous forms, which were previously examined in the present application. Accordingly, Applicant respectfully requests reconsideration of the pending restriction requirement.

Objection to the Specification

Applicant acknowledges the objection to the Specification. Applicant has amended the Abstract in the Specification as requested by the Examiner. Accordingly, Applicant respectfully requests that the objection to the Specification be withdrawn.

Double Patenting Rejections

Claims 39 and 57 stand rejected on the ground of nonstatutory obviousness-type double patenting as purportedly being unpatentable over U.S. Patent No. 6,330,088 (the “**’088 patent**”) in view of U.S. Patent No. 5,223,955 issued to Zabka. Applicant respectfully requests that the double-patenting rejection be withdrawn because the present application is a divisional application of the ’088 patent.

Section 804(II) of the *Manual of Patent Examining Procedure* (Ed. 8, Rev. 7, Jul. 2008) (“MPEP”) states that “[g]enerally, a double patenting rejection is not permitted where the claimed subject matter is presented in a divisional application as a result of a restriction requirement made in a parent application under 35 U.S.C. 121.” Moreover,

The prohibition against holdings of double patenting applies to requirements for restriction between the related subjects treated in MPEP § 806.04 through § 806.05(j), namely, between combination and subcombination thereof, between subcombinations disclosed as usable together, between process and apparatus for its practice, between process and product made by such process and between apparatus and product made by such apparatus, etc., so long as the claims in each application are filed as a result of such requirement.

MPEP § 804.01.

The present application was filed as a divisional application following a restriction requirement from the Examiner in the parent application—which is now the ’088 patent. Moreover, Applicant respectfully submits that claims 39 and 57 are within the non-elected species that was subject to restriction in the ’088 patent. The prohibition under 35 U.S.C. § 121 against double patenting rejections therefore applies. Accordingly, Applicant respectfully requests that the double-patenting rejections of claims 39 and 57 be withdrawn.

Rejections of Claims over Oosaka, Kihara, Zabka

Claims 39 and 57 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,922,060 issued to Oosaka, et al. (“**Oosaka**”). Claims 40 and 41 stand rejected under § 103(a) as purportedly being unpatentable over Oosaka in view of U.S. Patent No. 5,949,559 issued to Kihara, et al. (“**Kihara**”). Claim 65 stands rejected under § 103(a) as being purportedly unpatentable over Oosaka in view of U.S. Patent No. 5,223,955 issued to Zabka (“**Zabka**”). Applicant respectfully submits that claims 39-41, 57, and 65 are allowable under § 102(b) and § 103(a) because the cited passages of these references fail to disclose each limitation of the pending claims.

Independent claim 39 recites a voxel-control lens located in the path of an object beam. The voxel-control lens is positioned at a distance from the location for an elemental hologram on a holographic recording material. The Office Action equates Oosaka’s lens 45 with the voxel-control lens in claim 39. The Office Action also equates Oosaka’s spot light source interference pattern 26 with the elemental hologram in Applicant’s claim 39. Even if these characterizations of Oosaka are correct (a point which Applicant does not concede), the cited passages of Oosaka nonetheless fail to disclose that the position of the voxel-control lens is based at least in part on “**a size of the elemental hologram,**” as recited in claim 39. The Office Action appears to recognize that this limitation is not explicitly disclosed in the cited passages of Oosaka. Applicant agrees with this assessment. The Office Action instead relies on a theory of inherency.

According to the Office Action, lens 45 has a “position in the optical system [that] is necessarily dictated by . . . the size of the elemental hologram that is required at the holographic medium.” Office Action, p. 10. Applicant respectfully disagrees.

The rejection relies on a view that such a positioning of lens 45 based on the size of an elemental hologram is somehow inherent, either in Oosaka or the ordinary skill in the art, or possibly in their combination. However, the Board of Patent Appeals and Interferences has spoken on this issue:

In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.

Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). *See also*, MPEP, § 2112(IV).

The Office Action fails to establish, or even attempt to establish, that the limitations of claim 39 “*necessarily* flow[]” from the teachings of Oosaka. Applicant respectfully submits that, on the contrary, these limitations do not at all follow from the cited passages of Oosaka, which describes lens 45 as used for narrowing light from optical fiber 44. *See*, Oosaka, 6:54-62. A person having ordinary skill in the art would readily understand that the positioning of a lens such as lens 45 can be based on a cornucopia of other optical design parameters, instead of being related to the size of an elemental hologram.

Indeed, Oosaka itself demonstrates that the assumption of inherency is unfounded. With regard to the size of Oosaka’s elemental holograms, the reference indicates that a mask having an appropriate slit or pinhole is fixed adjacent the hologram recording material:

Assuming that the elemental hologram is recorded on the hologram recording material along the circular periphery of a diameter of 100 mm, using a mask having a slit or pinhole of a width of 150 microns fixed adjacent the hologram recording material, 2,000 elemental holograms are approximately arranged on the circumference.

Oosaka, 3:35-41. Thus,

[i]n operation of the device thus constructed, when the reference light a_2 and the object light b are illuminated through the slit or pinhole 11 in the mask 10 onto the recording material 9, the interference pattern of the spot light source is recorded on the recording material.

Oosaka, 6:15-19.

Moreover, Oosaka makes it additionally clear that object beam b is expanded before impinging on mask 10, so that beam b illuminates not only the slit or pinhole in mask 10, but also illuminates optical fibers that pick up the light for monitoring in light detector 22 and meter 23:

The object light b is directed toward the slit or pinhole 11 in the mask 10 by the planar mirror 18. The slit or pinhole 11 in the mask 10 functions such that the interference pattern of the spot

light source on the planar mirror 18 and the reference light is recorded on the microscopic area on the hologram recording material 9. Since the object light *b* is focused on the planar mirror 18 and is expanded in light diameter on the mask 10, a part of the object light *b* can be picked up by fixing the optical fibers 21 in the very vicinity of the slit or pinhole 11, and can be directed toward a light detector 22, and a variable density filter 12 is set such that the output of the object light *b* at the position of the slit or pinhole 11 in the hologram recording material 9 as indicated by a meter 23 results in a constant exposure regardless of the position of the spot light source.

Oosaka, 5:40-49 (emphasis added).

In view of these teachings, it is clear that not only do the cited passages of Oosaka fail to support the Office Action's assertion of inherency, they show that that this assertion is incorrect. Oosaka's expanded beam *b*—produced by upstream elements such as lens 45 in Oosaka—is wider than slit or pinhole 11, since it additionally illuminates optical fibers 21. The beam passes through slit or pinhole 11 to reach hologram recording material 9. Accordingly, the upstream elements do not control the size of Oosaka's elemental holograms on recording material 9. The position of these elements, such as Oosaka's lens 45, is therefore not related to the size of Oosaka's elemental hologram. Rather, this size is determined by a separate component: slit or pinhole 11 in mask 10. After passing through slit or pinhole 11, the resulting light beam has dimensions defined by slit or pinhole 11, and creates the interference pattern that is recorded on Oosaka's recording material. *See, e.g.,* Oosaka, 3:35-41; 5:40-49; 6:15-19.

Accordingly, it is not inherent in the cited passages of Oosaka that the position of lens 45 is based at least in part on “a size of the elemental hologram,” as recited in claim 39. Because of these shortcomings, even a combination of the cited passages of Oosaka with the skill in the art fails to render claim 39 unpatentable under § 102(b). Applicant therefore respectfully requests that the rejection under § 102(b) over Oosaka of claim 39 be withdrawn. At least for similar reasons, Applicant respectfully requests that the rejection under § 102(b) over Oosaka of claim 57 be withdrawn.

Claims 40 and 41 depend on claim 39. Claim 65 depends on claim 57. Thus, the above arguments regarding Oosaka and the skill in the art apply with full force to the rejections under § 103(a) of claims 40-41 and 57. The Office Action does not propose that the shortcomings of

Oosaka are remedied by the cited passages of Kihara or Zabka. Moreover, Applicant does not find the above-noted limitations in the cited passages of Kihara or Zabka. Accordingly, Applicant respectfully requests that the rejection under § 103(a) over Oosaka and Kihara of claims 40-41, and the rejection under § 103(a) over Oosaka and Zabka of claim 65 be withdrawn.

Rejection of Claims over Kihara and Zabka

Claims 39-41, 57, and 65 stand rejected under 35 U.S.C. § 103(a) as purportedly being unpatentable over Kihara in view of Zabka. Applicant respectfully submits that claims 39-41, 57, and 65 are allowable under § 103(a) because the cited passages of these references fail to disclose each limitation of the pending claims.

As discussed above, independent claim 39 recites a voxel-control lens located in the path of an object beam, positioned at a distance from the location for an elemental hologram on a holographic recording material. The Office Action equates Zabka's second cylindrical lens 47 with the voxel-control lens in claim 39. The Office Action also appears to equate Kihara's dotted or striped "holographic elements" on hologram recording medium 30 with the elemental hologram in Applicant's claim 39. In addition, the Office Action appears to equate Zabka's holographic recording material 53 with Kihara's hologram recording medium 30.

Even if these characterizations of Kihara and Zabka are correct (a point which Applicant does not concede), the cited passages of Kihara and Zabka nonetheless fail to disclose that the position of the voxel-control lens is based at least in part on "**a size of the elemental hologram**," as recited in claim 39. The Office Action appears to recognize that this limitation is not explicitly disclosed in the cited passages of Kihara and Zabka. Applicant agrees with this assessment. Again, the Office Action relies instead on a theory of inherency.

According to this second theory of inherency, "[t]he position or placement of" Zabka's second cylindrical lens 47 "in the optical system necessarily depends on . . . the size of hologram that is required." Office Action, p. 11. Applicant understands this statement from p. 11 as asserting that the position or placement of cylindrical lens 47 in Zabka's optical system necessarily depends on the size of the holographic elements from Kihara. Applicant respectfully disagrees with this assertion.

The Office Action fails to establish, or even attempt to establish, that the limitations of claim 39 necessarily flow from the teachings of Kihara and Zabka, as would be required to support the inherency-based rejection. *See*, MPEP, § 2112(IV). Applicant respectfully submits that these limitations indeed do not at all follow from the cited passages. Zabka describes lens 47 as a cylindrical lens that is used to vertically converge beam 23 to a line focus 51, while enhancing image fidelity, providing flexibility, and providing gives easy focus control of line focus 51. *See*, Zabka, 5:68—6:3; FIGs. 2-3. A person having ordinary skill in the art would readily understand that the positioning of a lens such as lens 47 can be based on a variety of other optical design parameters, instead of being related to the size of Kihara's holographic elements.

Thus, it is certainly not necessary nor inherent in Zabka that the position of lens 47 must be based on the size of an elemental hologram. This is additionally clear from the fact that Zabka does not use or even disclose any elemental holograms. The Office Action turns to Kihara's holographic elements as purportedly teaching elemental holograms. Yet Zabka purports to describe an adequately operating device, without relying on or even mentioning Kihara's holographic elements. A person having ordinary skill in the art would certainly not view the size of Kihara's holographic elements as being a necessary consideration for the position of lens 47 in Zabka.

Moreover, a reading of Kihara and Zabka shows that the references themselves demonstrate that the assumption of inherency is unfounded. First, Kihara is explicit and clear on the fact that the size of the cited holographic elements is not based on the position of a lens such as Zabka's lens 47. Rather, the size of Kihara's holographic elements is determined based on a mask, which "has an opening corresponding to the width of the holographic element." *See*, Kihara, Abstract. Kihara thus fails to disclose that the position of a voxel-control lens should be based on, or even related to, a size of an Kihara's holographic elements.

Second, Zabka makes clear that the placement of lens 47 "greatly effects depth of field of the resultant hologram." *See*, Zabka, 6:9-12 (emphasis added). Accordingly, a person having ordinary skill in the art would understand that the placement of lens 47 should be decided with care regarding depth of field, and that the placement of this lens 47 is therefore not a parameter to be readily be used for other purposes, such as the size of an elemental hologram.

Zabka goes on to particularly detail, in text and drawings, that the placement of lens 47 is tied to depth of field, and concomitantly, to the resulting size of a hologram image that will appear to a user when the user looks at the hologram:

With reference to FIGS. 7A, 7B, 8A, 8B, 9A and 9B, the number and position of the cylindrical condensing lens system affects both the curvature required for the support, and the depth and the size of the resulting image. The hologram produced by the condensing optics, as set up in FIGS. 1-4 and 7A, will produce a holographic image 93 in front of the film plain, if support 91 has a shallow curvature, as illustrated in FIG. 7B. With the optics positioned as illustrated in FIG. 8A, curved support 95 is required, with the curvature of support 95 is greater than the curvature of support 91 (i.e. $r_{91} > r_{95}$). The image 97 will appear to have greater depth, but will be smaller in size than image 93. Finally, by using only lens 47, as illustrated in FIG. 9A, greater image depth is achieved, as illustrated in FIG. 9B. The curvature of support 99 is steeper than the curvature of support 95; the size of image 101 is smaller than image 97. Thus, the closer the condensing optics to film 53, the larger the resulted image and the shallower the depth of field. Conversely, the further the condensing optics from film 53, the greater the depth and the smaller the viewed image.

Zabka, 7:49—8:2. *See also, id. at* FIGs. 7A, 7B, 8A, 8B, 9A and 9B.

The “size” of the projected images discussed in the above passage is made graphically clear in Zabka’s FIGs. 10-12, which depict a user looking at the projected images 97 and 105. Applicant notes that this “size” discussed in the above passage is the size of projected images 93, 97, and 101 that are projected by Zabka’s holograms and viewed by a user. This is not the size of the holographic elements on Kihara’s recording material. As noted above, the size of Kihara’s holographic element is based on a mask that “has an opening corresponding to the width of the holographic element (*see*, Kihara, Abstract). In view of Zabka’s detailed teachings regarding the positioning of lens 47 with regard to depth of field, a person having ordinary skill in the art would not—and could not—understand this lens as being an element that is positioned or placed in the optical system based on the size of Kihara’s holographic elements.

Rather than being inherent in the cited teachings of Kihara and Zabka, it would be counter to teachings from each of those references to assume that the position or placement of cylindrical lens 47 in Zabka’s optical system necessarily depends on the size of Kihara’s

holographic elements. The theory of inherency on which the rejection relies is therefore unfounded, and moreover, is incorrect.

Because of these shortcomings, even a combination of the cited passages of Kihara and Zabka with the skill in the art fails to render claim 39 unpatentable under § 103(a). Independent claim 39 is therefore allowable under § 103(a). At least for similar reasons, independent claim 57 is also allowable under § 103(a). Claims 40, 41, and 65 depend variously on claims 39 and 57, and are therefore also allowable as claims dependent on an allowable base claim. Accordingly, Applicant respectfully requests that the rejection under § 103(a) over Zabka and Kihara of claims 39-41, 57, and 65 be withdrawn.

New Claims

New claims 66-67 depend on claim 57, and are therefore allowable at least for the reasons discussed above.

CONCLUSION

In view of the amendments and remarks set forth herein, the application and the claims therein are believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5097.

If any extensions of time under 37 C.F.R. § 1.136(a) are required in order for this submission to be considered timely, Applicant hereby petitions for such extensions. Applicant also hereby authorizes that any fees due for such extensions or any other fee associated with this submission, as specified in 37 C.F.R. §§ 1.16 or 1.17, be charged to deposit account 502306.

Respectfully submitted,

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